Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

PUBLIC HEALTH REPORTS

VOL. 35 JANUARY 9, 1920 No. 2

HUMAN ENGINEERING—A NEW MEDICAL SPECIALTY.

By FRANK LESLIE RECTOR, Acting Assistant Surgeon, United States Public Health Service.

A high labor turnover has brought many industrial accidents in its wake, and, with an increasing sense of responsibility, States have passed laws requiring that these be taken care of. Compensation laws have greatly increased the demand for the industrial physician, and the man of medical training has thus been called into closer association with industry than ever before.

A comparatively new field has been opened to the profession, and some few of its members have been quick to grasp the opportunity and to see the possibilities that the industrial field holds in store for them. Compared to the large number who have taken their work as a matter of course, men of vision have been few, but those few have placed an indelible stamp upon industrial medicine and have formed a solid basis upon which this special branch of medical practice will be built. Unlike most other medical specialties, this one is rooted in the principles of preventive medicine, as it has to do with keeping the worker well. A contented and healthy worker can produce far more than a dissatisfied and sick worker, and industrial management is learning the simple lesson that it pays to make and keep a man well and happy.

To this new speciality, usually termed "Industrial Medicine," I prefer to give another name, one that more clearly defines the real scope and possibilities of what the work offers, the name of "Human Engineering," for it clearly covers fields usually thought to be far removed from that of medicine, but which I hope to show are closely associated with the medical field when considered industrially.

The field of activity of this work is limitless. It has been estimated that among the 40,000,000 industrial workers in the United States there are 2,000,000 lost-time accidents yearly entailing a loss of time of more than one day each. Of this number there are 750,000 workers who sustain a disability of more than four weeks' duration. About 22,500 are killed, and from 15,000 to 18,000 more suffer permanent disability. This loss is estimated to be more than 18,000,000 man-days per year, or the working time of over 60,000 persons. Each industrial worker is sick on the average 8 days per year, which amounts to the time lost of over 1,000,000 working people for one year. The loss in wages is over $1,000,000,000 per year, to say nothing of the loss in production, the cost of medical attention, and the cost to the community of the permanently disabled workers that cease to be self-supporting. There is no greater problem before the country to-day than this problem of medical supervision of industry. There is no one in the country to-day that can better cope with this situation than the properly equipped industrial physician.

Not only must the industrial physician of the future rid himself of the designation of the "Company Doc," the appellation of an official who took care only of what came his way, but he must be able to interpret industrial processes, understand the operation of mechanical appliances, size up the human requirements for filling a certain job, make scientific studies of the hazards of occupations, make certain that proper working conditions are provided for the industrial population, and interpret these findings in terms of increased production, decreased labor turnover, and healthier and happier workers. He should also be able to tune up the home, community, and industrial environment, so that each would bear its part of carrying forward the great commercial life of the Nation.

The human engineer comes into intimate contact with four departments of an industry, namely, employment, safety, medicine, and welfare. If he is fulfilling the obligations of his position, he must know intimately and well the workings of each branch of this group. By making a physical examination of applicants for employment he exerts a direct influence upon the placing of workers. If he properly follows up accidents, he comes in contact with the safety department. Of course, he dominates the medical department, and if he has the proper interest in the worker away from his factory job he must be familiar with what is being done in the home and community environment of the workman.

Let us look at some of the details of contact of the human engineer with these agencies within the plant. The human engineer will first of all be called upon to determine if an applicant who is fitted by training or otherwise for the job he seeks is physically capable of filling the position. To make an intelligent application of his physical findings he must familiarize himself with the different jobs in the plant, with the different steps in the manufacturing processes, and then formulate a set of standards with which the applicant must comply in order to fill the position to the best interests of both his employer and himself. A worker may be unsuited for a job by reason of physical defect of which he may be ignorant, by stature, temperament, age, education, or other reason. The human engineer will determine these conditions, as well as the mental attitude of the worker toward his work, at the time of making the physical examination, and will be able to place the worker where he best fits into the scheme of the organization.

Communicable diseases can also be detected at this time and their introduction into the plants prevented. Measures looking to the correction of such defects as flat feet, impaired vision and hearing, decayed teeth, and others of a similar nature can be instituted at the time of making the physical examination, so that the worker is able to approach his task in the best possible physical condition. Without the physical examination to discover the defects of the applicant, useful members of the industrial community are oftentimes denied employment.

One of the big problems the human engineer can help solve is that of placing the handicapped worker where his services can be of most value to himself and to industry. By so doing the economic independence of the worker is assured, his mental attitude is directed into right channels, and he becomes a community asset rather than a liability. By placing the worker to the best advantage the work of the employment department is lightened by reducing turnover, a thing always costly and one to be avoided. The worker has also been made to feel that some one has his interests at heart in thus placing him in his work.

The human engineer's contact with the safety department usually begins when an accident case is brought to the dispensary for treatment. In addition to caring for the injury he makes an investigation as to how the accident occurred and, in cooperation with the safety engineer, determines ways and means of preventing the occurrence of similar cases. He may find that the work is fatiguing because of faulty posture, poor ventilation, or bad lighting, which may be insufficient lighting or too brilliant lighting with the production of glare, or because of other conditions susceptible of correction. These matters are all within the scope of the safety department to correct, but that department is seldom equipped to discover all of them or to associate them with the cause of the accident.

The human engineer's researches will lead him to consider occupational poisonings when the processes suggest such possibilities. The physical reexamination of workers in hazardous occupations will result in the accumulation of scientific facts of known value with which to replace the oftentimes erroneous opinions now held regarding the dangers and hazards of certain occupations.

In addition to caring for the accidents that occur, the human engineer should repair the temporary defects of the workers, which tend to reduce their effectiveness to a considerable extent. Many times workers report for duty with headaches, indigestion, beginning colds, and other seemingly trifling ailments, which can be relieved or eliminated by prompt application of therapeutic measures. By eliminating them a day's production can be added to the factory output, and the worker will have the added satisfaction of knowing that his small needs are cared for in a sympathetic manner. He will also appreciate the fact that there is some one to whom he can go for consultation and advice regarding such minor ailments as may develop in the course of the day's work. The prompt attention to minor accidents will prevent infections, which always result in much lost time, lost wages, and lowered production.

While making a thorough study of the human machine in its industrial surroundings the human engineer will seek further light regarding the worker's home and community environment. Here his contact with the welfare department begins; but it should not end until home conditions have been investigated and the fact determined whether or not they constitute potentially a causal factor in industrial accidents. A sick member of the family may cause such uneasiness in the mind of the worker that he will be careless and much below par in his work. It may also be determined if there is unsympathetic supervision over this man's work by the foreman. A domineering and overbearing foreman can do more to reduce output and breed discontent than almost any other factor in an organization.

The human engineer will not stop at treating the patient and removing the disabling cause, whether it be due to environment within or without the plant. There exists the opportunity of instilling the ideas of preventive medicine in the broad sense into the minds and hearts of those with whom he comes in daily contact. Here the great field of preventive medicine opens before him and he has unlimited opportunities of sowing the seeds of right living in this fallow soil. Short and simple messages on healthful home conditions, personal hygiene, proper food and clothing, proper habits of body and mind, and the sure penalty suffered from a neglect of these matters can be placed before the industrial worker with an influence that can be obtained in no other way.

The question of mutual-benefit associations, old-age pensions, recreational and amusement facilities, community hygiene and sanitation, especially improved milk and water supplies, sewage disposal, and related matters having a bearing upon the worker's surroundings or state of mind, all come within the scope of the activities of the human engineer if he but applies himself to them in the proper relation. The greater the influence for the common good of his industry in the community, the greater are his privileges and duties in community associations.

In addition to organization and executive ability, the engineer should have some statistical knowledge if he is to fulfill the highest purpose in his work. Careful records must be kept of turnover, accidents, illness, and absence, not of the plant in its entirety, but by departments and occupations, and these records must be correlated and analyzed so as to show where deficiencies lie and upon whose shoulders the responsibility for their correction rests.

From what has been said it is evident that the position of this new member of the industrial community is an important one. He should be the administrative head of the industrial-relations group of activities. His place as head of the medical department is assured by education, training, and experience. He should coordinate his work with that of the employment department on account of his knowledge of individual workers gained through physical examinations, his knowledge of the requirements of the job and of working conditions. He should work in close harmony with the safety department by reason of his contact with accident cases and his knowledge of plant processes and hazards. He should aid in the work of the welfare department by reason of the intimate contacts that have been established by his relations with workers in other departments and in their homes. Combining these duties with those of the interpretation of factory records having a direct influence upon production, the opportunity for education in preventive medicine, and the influence he has in shaping the home and community environment, it seems that the member of the medical profession who successfully accomplishes them is entitled to add to his name the degree of Human Engineer.

THE SEAMEN'S SERVICE CENTER IN NEW YORK CITY.

By E. W. Scott, Passed Assistant Surgeon, United States Public Health Service.

There has just been established in New York City the "Seamen's Service Center," to operate under the direction of the Surgeon General of the United States Public Health Service in cooperation with the American Red Cross, volunteer agencies, and individuals, for the purpose of assisting merchant-marine seamen entering the port of New York. It will act as a clearing house through which the sick, disabled, and needy sailors of the merchant fleets of the world may be distributed to cooperating social agencies or individuals for detailed help, and, when necessary, sent to institutions, hospitals, or dispensaries for proper care and treatment.

There are various agencies in the city of New York for these and similar purposes, and it is the object of this Center to act as a clearing house through which the seamen may be directed to the